



AGENCY FOR HEALTHCARE RESEARCH AND QUALITY



# **AHRQ National Web Conference on Opportunities for Digital Healthcare: Lessons Learned From the COVID-19 Pandemic**

## **Presented by:**

Jerry Osheroff, MD  
Alex Krist, MD, MPH  
Robert S. Rudin, PhD

## **Moderated by:**

Arlene Bierman, MD, MS  
Agency for Healthcare Research and Quality

July 1, 2021

# Agenda



- Welcome and Introductions
- Presentations
- Q&A Session With Presenters
- Instructions for Obtaining CME Credits

Note: You will be notified by email once the slides and recording are available.

# Presenter and Moderator Disclosures



**Jerry Osheroff, MD**  
Presenter



**Alex Krist, MD, MPH**  
Presenter



**Robert S. Rudin, PhD**  
Presenter



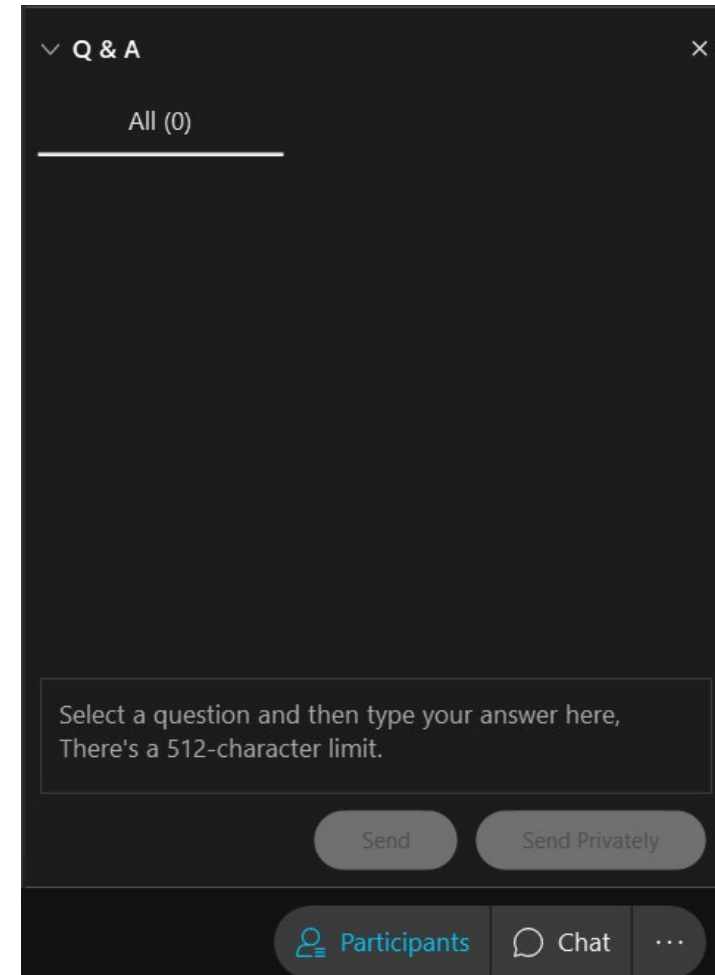
**Arlene Bierman, MD, MS**  
Moderator

This continuing education activity is managed and accredited by AffinityCE, in cooperation with AHRQ and TISTA.

- Panelist Disclosures: Dr. Osheroff, Dr. Krist, and Dr. Rudin have no relevant financial interests to disclose.
- Moderator Disclosures: Dr. Bierman has no relevant financial interests to disclose.
- Disclosure will be made when a product is discussed for an unapproved use.
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- Commercial support was not received for this activity.

# How to Submit a Question

- At any time during the presentation, type your question into the “Q&A” section of your WebEx Q&A panel
- Please address your questions to “All Panelists” in the drop-down menu
- Please include the presenter’s name or their presentation order number (first, second, or third) with your question.
- Select “Send” to submit your question to the moderator
- Questions will be read aloud by the moderator

A screenshot of the WebEx Q&A interface. At the top, it says "Q & A" with a dropdown arrow and a close button. Below that, it says "All (0)". There is a large text input area. At the bottom of the input area, it says "Select a question and then type your answer here, There's a 512-character limit." Below the input area are two buttons: "Send" and "Send Privately". At the very bottom, there are three buttons: "Participants" (with a person icon), "Chat" (with a speech bubble icon), and a menu icon (three dots).



# Learning Objectives



**At the conclusion of this web conference, participants should be able to:**

1. Explain challenges and opportunities to improve the evidence to guidance to action to data to evidence LHS cycle with digital healthcare approaches and tools – especially related to putting rapidly evolving evidence and guidance into practice for novel infectious diseases.
2. Describe a model for engaging patients in care planning to facilitate decision-making and discuss facilitators and barriers to implementing patient care planning.
3. Describe how digital healthcare technologies that support gathering patient-reported outcomes can be used to improve patient empowerment and patient-driven care and how these technologies have been adapted to face the needs presented by the pandemic.



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## **Leveraging Better Digital Healthcare Approaches to Improve Information Flow and Support Learning Health Systems**

**Jerome A. Osheroff, MD, FACP, FACMI**  
TMIT Consulting/ACTS COVID Collaborative

# Presentation Goal

- Discuss the challenges and opportunities to improve the **evidence to guidance to action to data to evidence** learning health system (LHS) cycle with digital healthcare approaches and tools
- Illustrate how COVID-19 is intensifying digital healthcare LHS efforts such as putting **rapidly evolving evidence and guidance into practice**

# Current LHS State: *Can't Get Information or Tools When, Where, How Needed*

Parts don't connect; information doesn't flow



# Result: Too Hard to Make “LHS Cycle” Work



## COVID-19 Pandemic:

- Highlights **life / death consequences** of silos, delays, gaps, inefficiencies
- Created **urgency and momentum to fix**

# AHRQ Evidence-Based Care Transformation Support (ACTS) Initiative/COVID Collaborative



- January 2019: ACTS start
- Goal: Develop **stakeholder-driven roadmap** for improving healthcare by making information from AHRQ / others more:
  - FAIR (findable, accessible, interoperable, reusable)
  - Computable
  - Useful
- **Stakeholder Community and Workgroup efforts**
  - Path from Current State to **shared Future Vision**
- March 2020: AHRQ supports [ACTS COVID Collaborative](#) to pilot steps toward Future Vision



# ACTS Stakeholder Community

## Participants by Category (n=330)

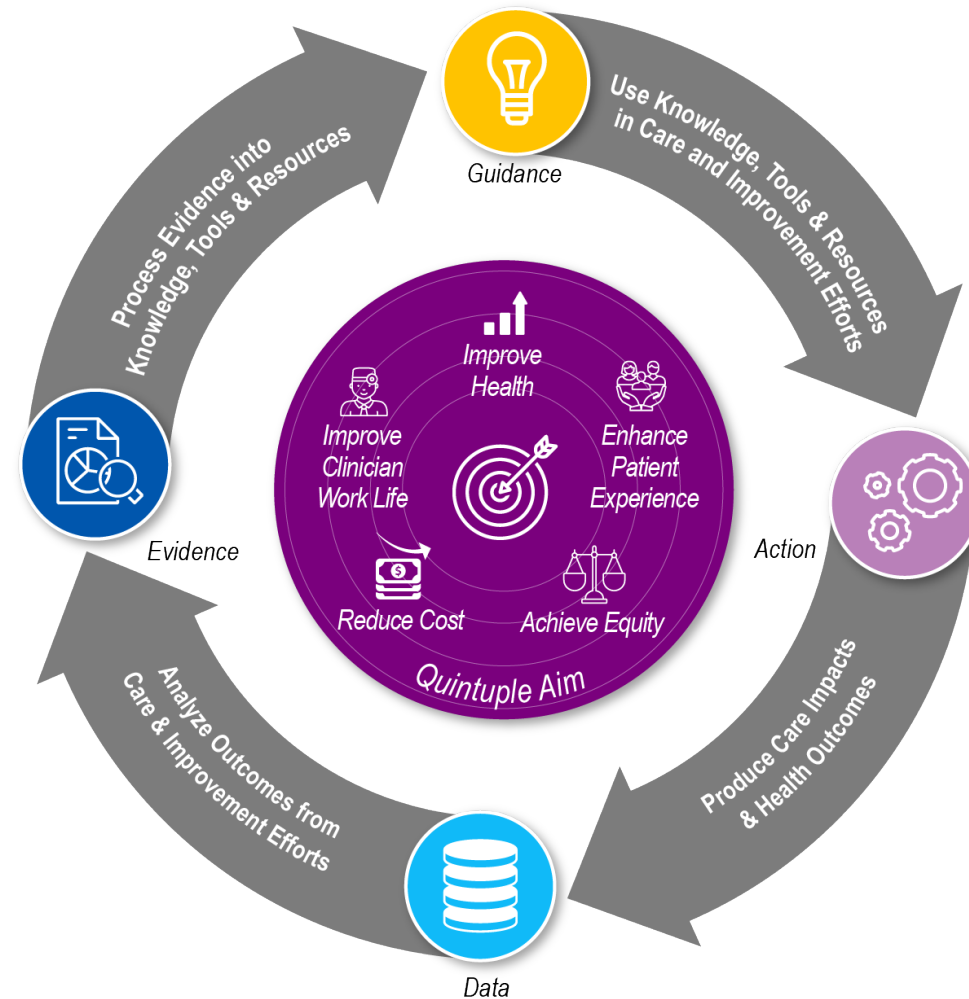


- Care Delivery (98)
- Quality (47)
- HIT / CDS Suppliers (63)
- Other Government Agencies (18)
- Informatics / Researchers (18)
- Specialty Societies (23)
- Patient Advocates (4)
- AHRQ (26)
- Payers (1)
- Other (32)

**Many of these are participating in ACTS COVID Collaborative efforts**

# Future Vision Overview

- Robust stakeholder-driven **Knowledge Ecosystem** =>
- Enables a collaborative, **virtuous improvement cycle** =>
- Where stakeholder **needs are met better** throughout cycle =>
- = Learning Health Systems (LHSs) **Achieve the Quintuple Aim**



# Path to Future Vision: ACTS COVID-19 Evidence to Guidance to Action Collaborative\*



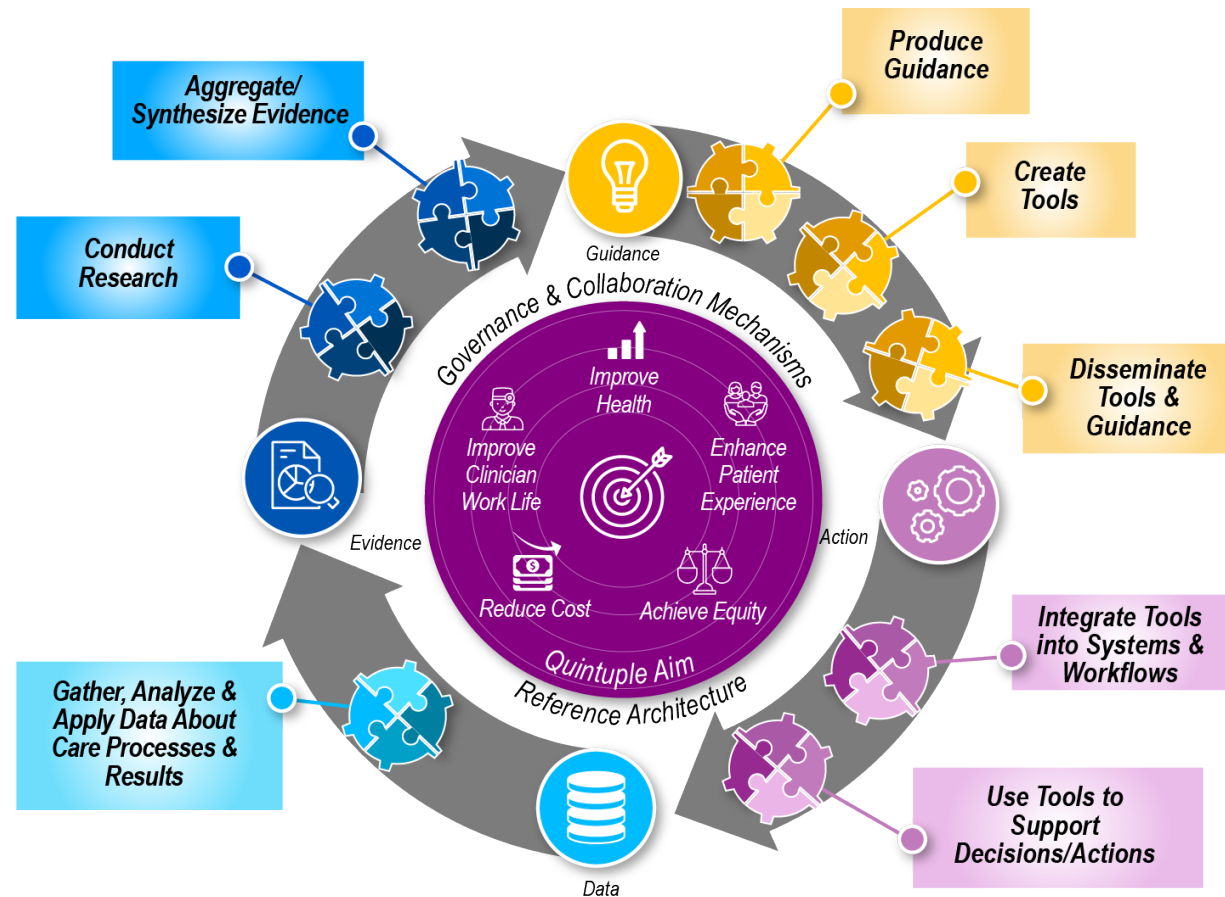
## Collaborative Goals

- **Cross-fertilize / enhance efforts** to develop & deliver COVID-19 evidence-based guidance & tools to care teams and patients
- Measurably **improve care & outcomes** for *selected* targets & settings; support / promote scaling to *many others*
- Advance tools, standards, and collaborations needed for a **patient-centered** knowledge ecosystem and LHSs

\*see [digital.ahrq.gov/covid-acts](https://digital.ahrq.gov/covid-acts)

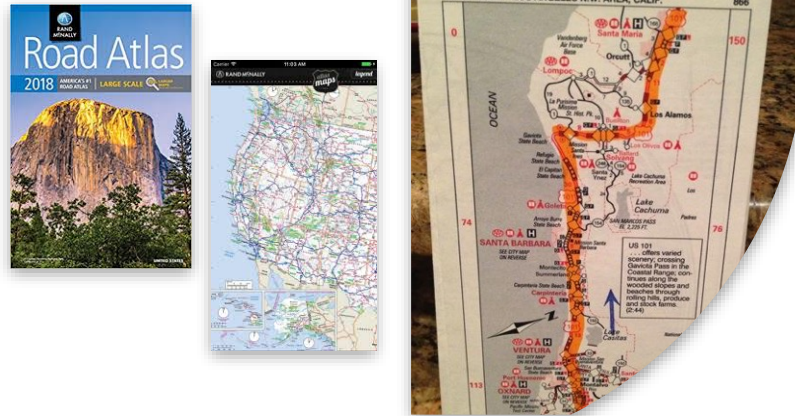
# Improving the LHS / Knowledge Ecosystem Cycle

Leverage **digital healthcare** approaches to make cycle more efficient and effective; make information more **computable** and **interoperable**



# Understanding Computability: Supporting Navigation Example

## PRINT



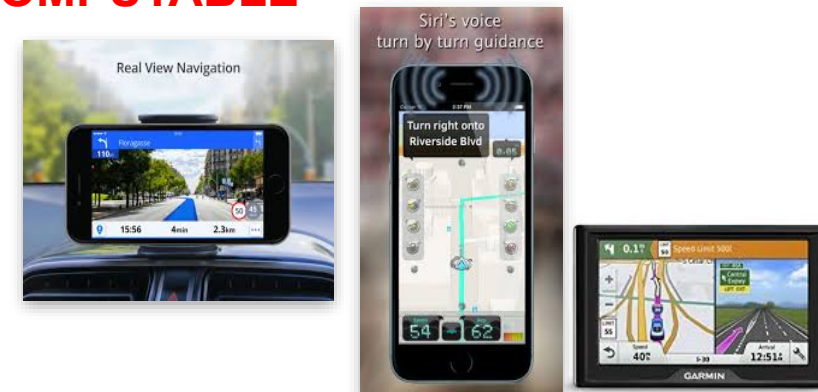
## DIGITAL



## EXECUTABLE



## COMPUTABLE



Used with permission from Brian S. Alper MD MSPH, Computable Publishing LLC

# Understanding Computability: Clinical Evidence and Guidance

## PRINT

Familiar, conceptually organizing much of our workflow

Sharable Value Unit

**Physical object**, a relatively large unit for sharing many knowledge bits in one container

## DIGITAL

Current PLATFORM for dissemination

Sharable Value Unit

**Digital object** (like a PDF), a relatively large unit for sharing many knowledge bits in one container

## EXECUTABLE

Many specific software tools, but each tool limited to local execution

Sharable Value Unit

**Small digital object** (micro-content), but within the constraints of the executable environment

## COMPUTABLE

Widely interactive, interoperable, integrated possibilities – PLATFORM of the near future

Sharable Value Unit

**Small digital object**, enabling contextualized selection, customizable presentation, and reusable dissemination



# Approach: Participant-Driven Learning Community to Accelerate Ecosystem Enhancement



Sampling of target areas and CDOs:

- **Anticoagulation:** Univ. of Minnesota, Univ. of Chicago
- **Diagnosis and Management of PASC (“Long COVID”):** VA, University of Minnesota, NACHC/health centers
- **ED Management of COVID-19:** VA/ACEP
- **Risk Assessment/Triage for COVID-19 in Ambulatory Settings:** NACHC/health centers

# For Targets, Collaborative Is Addressing:

- Keeping **clinical recommendations current**
  - Finding **current guidance**
  - Knowing when pertinent **new evidence** is available
  - Knowing when new **evidence changes guidance**
  - **Aligning CDS interventions** with latest information
  - Adapting evolving guidance **to specific patient groups**
- Developing **reusable, interoperable** CDS interventions / measures
- Implementing interventions so they are **used and useful**
- Getting **data** on best care processes/outcomes and using the data to **support improvement, create new evidence**

# Collaborative Participants Are:

- **Sharing** strategies, tools, challenges; **mutual support**
- **Optimizing** the current state
- **Exploring scaling successes** to other targets / CDOs
- **Producing an “Art of the Possible LHS Concept Demo”**
  - How can new digital healthcare tools / approaches drive **major improvements**?
  - What would it take to **broadly realize** these improvements?
  - **Initial Use Cases:** Long COVID, COVID Anticoagulation, Cancer Screening, Hypertension Control

# Concept Demo Component Examples

## Do We Need to Update Clinical Policies / CDS?

- **Potential “Practice-Changer” Notifier** (*exploring near-term production tool*)
  - Pre-defined list of sources for guidelines, systematic review, high impact studies
  - Automatically detect and display changes to websites
- **Recommendation Summary Generator** (*storyboard, requirements*)
  - Leverage computable evidence/guidance and automatically summarize to support managing specific patient groups
  - When evidence/guidance changes, automatically update and send notification

## How can we optimize care planning, shared decisions?

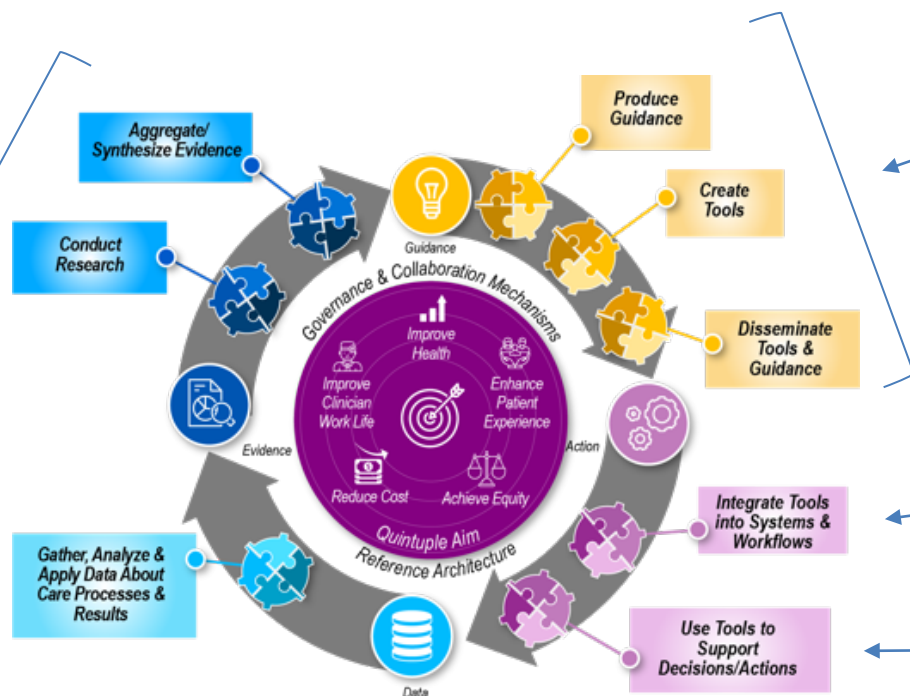
- **Shared Comprehensive Care Plans** (*storyboard, requirements*)
  - Patient-driven care planning in action (A. Krist presentation to follow)
  - Leverage [AHRQ / NIDDK eCarePlan work](#)

# LHS Concept Demo Overview

Users will be able to “walk through” a concept demo overview and delve into demo details as outlined below.

- Support for expressing / using research results as computable information

- Support for Gathering / Using Care Data



- AHRQ ACTS Portal  
(Limited Content Demo)
- Recommendation Summary Browser  
[Potential Practice Changer Notifier, in near term]
- Computable Clinical Practice  
Guideline / CDS authoring Support
- App Marketplaces
- Guidance on successful implementation
- Data / evidence / guidance-informed care plans

[partially covered in A. Krist presentation next]

Concept Demo shows “art of the possible” patient journey and supporting knowledge ecosystem; identifies where **standards** needed to drive development / use of **tools** used to create **end-user products**.

# Collaborative Steps Toward Future Vision



The ACTS Learning Community is addressing key steps needed to broadly realize the Future Vision:

- Cross-stakeholder **coordination**
- Ecosystem cycle **infrastructure enhancement**
- Computable evidence/guidance **content & processes**
- Guidance **implementation**
- **Evaluation, planning, piloting, scaling**



# Stakeholder Engagement Towards Future Vision

**Thirty-six organizations** provided support letters indicating plans to collaborate and align efforts / investments to achieve the Future Vision

**Federal Agencies: 1**

[VHA](#) (Nebeker)

**Care Delivery Organizations: 8**

[VCU/ACORN](#) (Krist)

[UM Health Fairview](#) (Melton-Meaux/Tignanelli)

[U Chicago Medicine](#) (Umscheid),

Rutgers [RWJBarnabas Health](#) (Sonnenberg)

[MUSC](#) (Lenert)

[Hennepin Healthcare](#) (Pandita)

[AACHC-CVN](#) (Frick)

[VUMC](#) (Johnson)

**Professional Societies/Accrediting Bodies/Institutes: 7**

[American Medical Association](#) (Rakotz)

[AMIA](#) (Dykes)

[ACMQ](#) (Casey)

[ACCME](#) (Singer)

[NCQA](#) (Barr)

[RTI](#) (Richardson)

[ACP](#) (Qaseem)

**Patient Advocates: 1**

[Hassanah Consulting](#) (Tuftte)

**Health IT Vendors/Initiatives: 9**

[Cognitive Medical Systems](#) (Burke/Bormel)

[Health Catalyst](#) (Rimmasch)

[Apervita](#) (Middleton)

[U Mich/MCBK](#) (Friedman/Richesson/Flynn)

[Logica Health](#) (Huff)

[EBM on FHIR/COKA/Computable Publishing](#) (Alper)

[BPM+ Health](#) (Rubin)

[HL7](#) (Jaffe)

[PICOPortal](#) (Agai)

**Clinical Evidence/Guidance Organizations: 10**

[Cochrane](#) (Soares-Weiser)

[COVID-END](#) (Grimshaw)

[GIN](#) (Harrow)

[JBI](#) (Jordan)

[Epistemonikos](#) (Rada)

[MAGIC Evidence Ecosystem Foundation](#) (Vandvik/Brandt)

[McMaster University](#) (Iorio)

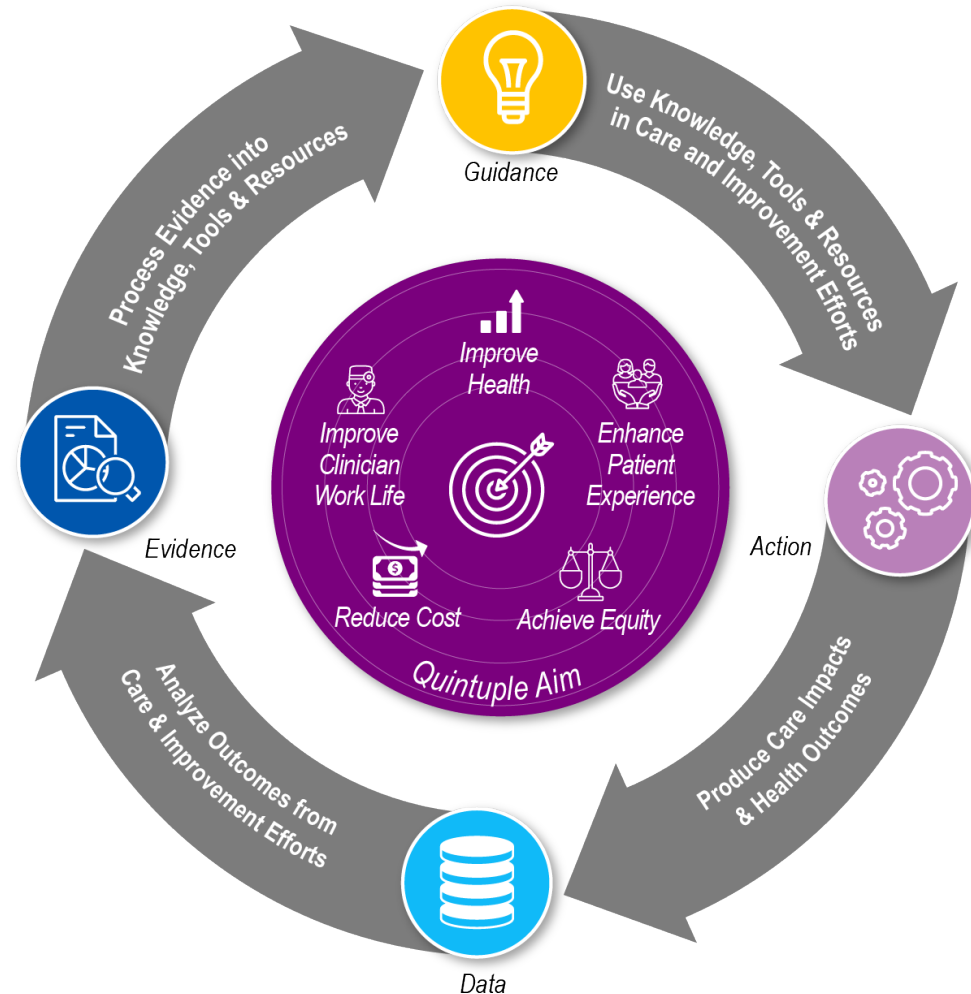
[University of MN EPC](#), School of Public Health, Division of Health Policy and Management (Butler/Beebe)

[Brown University EPC – SRDR](#) (Saldanha)

[Penn Medicine Center for Evidence-based Practice](#) (Mull)

# Evidence / Guidance Preparations for the Next Pandemic; Build on ACTS Collaborative

- Develop **robust and virtuous evidence/guidance/LHS cycle**
- Quickly **transform data into living evidence, guidance, decision support interventions and measures**; use to **guide care, process results data** to drive **continuous improvement**
- Make **knowledge interoperable** to complement data interoperability



# Takeaways

- **Key lessons**
  - Community commitment to collaborating to fix these big problems
  - Need to weave together many valuable efforts working on pieces of the Knowledge Ecosystem to get the whole system to work better
- **Activities** with the greatest impact
  - Weekly calls
  - Collaboration website
  - Position the work to help stakeholders achieve their goals (as opposed to “please help the government do this project”)
- **Strategies** for planning similar projects
  - Pay careful consideration to collaboration infrastructure (document editing, discussion forums, websites)
- **Need computable knowledge** to make the LHS cycle work
  - Both data *and* knowledge need to be FAIR

# Contact Information



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ACTS Collaborative Website: <https://covid-acts.ahrq.gov>



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# Care Planning: Getting Evidence to Patients to Guide Action

Alex Krist, MD, MPH  
with Dave Carlson, PhD, and Eric Peele  
Virginia Commonwealth University  
Family Medicine and Population Health

# Presentation Goal

- Describe key steps in making guidance computable via interoperable standards-based formats
- Describe a model for engaging patients in care planning to facilitate decision-making
- Discuss facilitators and barriers to implementing patient care planning

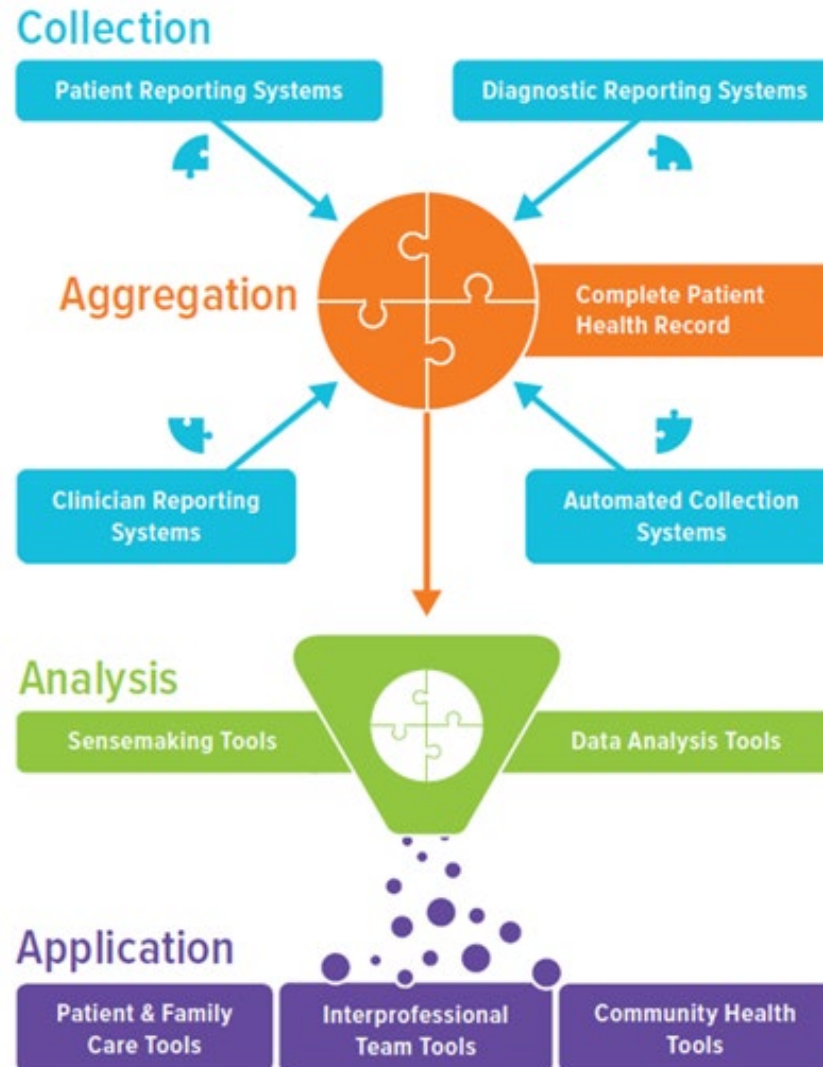


# What a *Better World* Looks Like

Information systems should be able to...

1. Anticipate patient decisions
2. Send patient educational information and care planning tools prior to an encounter
3. Prepare patient to participate in decision-making process
4. Collect information about where the patient is with decision journey and share with clinician
5. Support the patient in creating a care plan

# Functions of Digital Health



NASEM report  
*Implementing  
High Quality  
Primary Care*

<https://www.nationalacademies.org/our-work/implementing-high-quality-primary-care>

Emphasis on  
“sense-making”  
functionality and  
making right care at  
right time easy

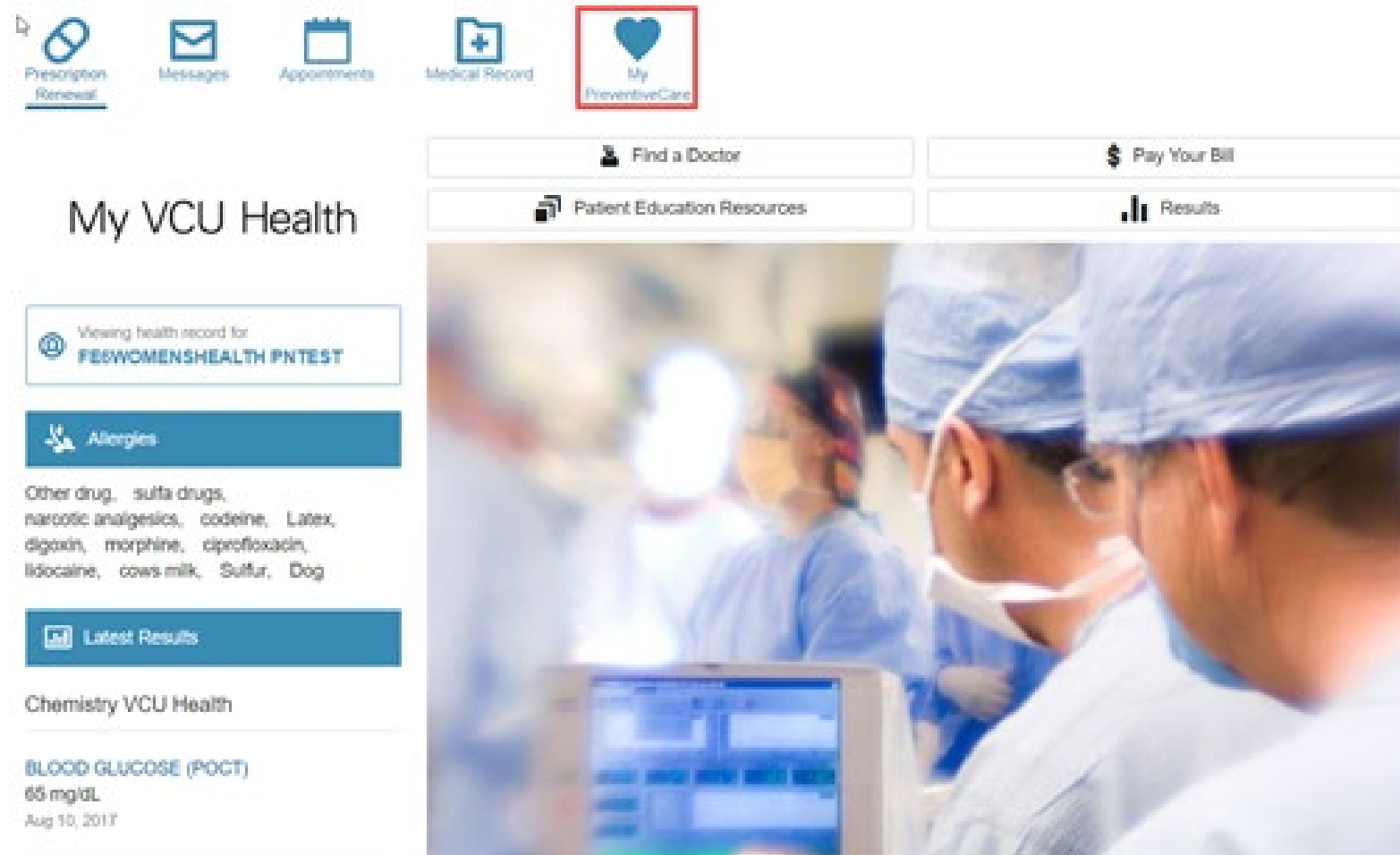
# Patient Information Systems Remain Underdeveloped

LEVEL	FUNCTIONALITY
1	Collect patient information, such as self-reported demographic and risk factor information (health behaviors, symptoms, diagnoses, and medications)
2	Integrate patient information with clinical information through links to the electronic medical record and/or claims data
3	Interpret clinical information for the patient by translating clinical findings into lay language and delivering health information via a user-friendly interface
4	Provide individualized clinical recommendations to the patient, such as screening reminders, based on the patient's risk profile and on evidence-based guidelines
5	Facilitate informed patient action integrated with primary and specialty care through the provision of vetted health information resources, decision aids, risk calculators, personalized motivational messages, and logistical support for appointments and follow-up

JAMA 2011 Jan  
19;305(3):300-1



# MyPreventiveCare: Our Patient-Centered Platform (2008-2021)



The screenshot displays the 'My VCU Health' patient portal. At the top, a navigation bar includes icons for Prescription Renewal, Messages, Appointments, Medical Record, and My PreventiveCare (which is highlighted with a red border). Below this, a grid of buttons offers services: Find a Doctor, Pay Your Bill, Patient Education Resources, and Results. The main content area on the left shows a section for 'Viewing health record for FEBWOMENSHEALTH PNTST' with a sub-section for 'Allergies' listing various drugs and substances. Below the allergies, there is a 'Latest Results' section for 'Chemistry VCU Health' showing a 'BLOOD GLUCOSE (POCT)' result of '65 mg/dL' dated 'Aug 10, 2017'. On the right side of the portal, there is a large image of medical professionals in a clinical setting, with one person looking at a tablet displaying a patient's health record.

Prescription Renewal Messages Appointments Medical Record **My PreventiveCare**

Find a Doctor Pay Your Bill

Patient Education Resources Results

My VCU Health

Viewing health record for FEBWOMENSHEALTH PNTST

Allergies

Other drug, sulfa drugs, narcotic analgesics, codeine, Latex, digoxin, morphine, ciprofloxacin, lidocaine, cows milk, Sulfur, Dog

Latest Results

Chemistry VCU Health

BLOOD GLUCOSE (POCT)  
65 mg/dL  
Aug 10, 2017



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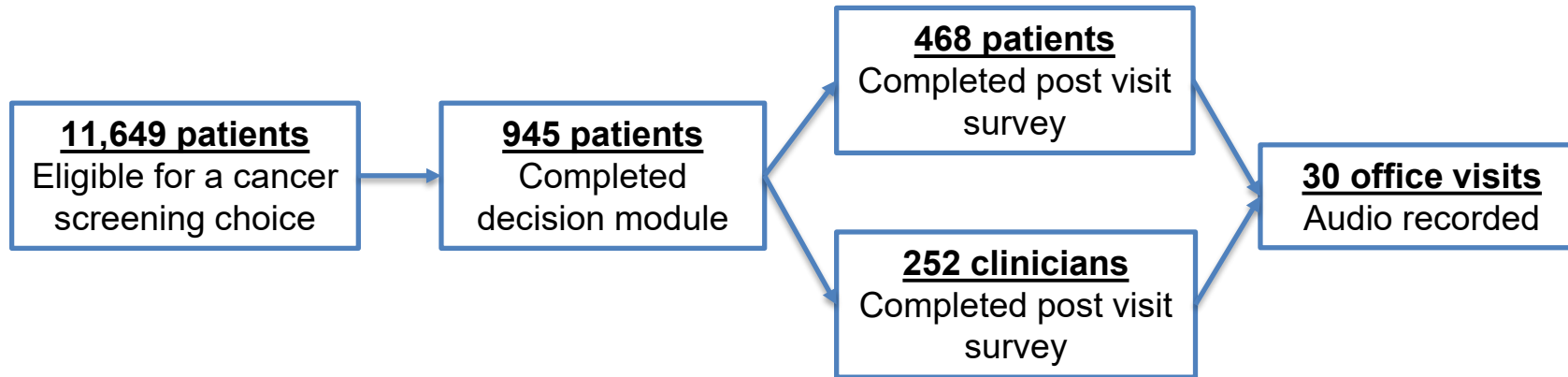


## ***Prior Work (PCORI):***

# **Understanding the Patient Journey**

# Patients' Decision Journey

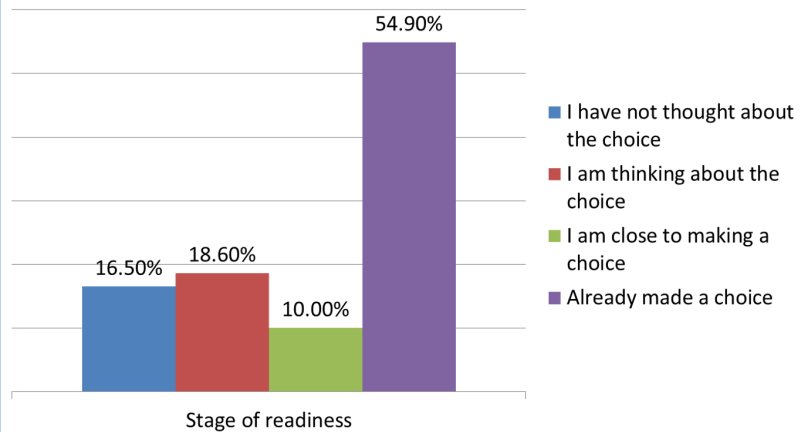
17 question decision module, walked patients through the decision and tailored educational material, and shared patient information with the clinician



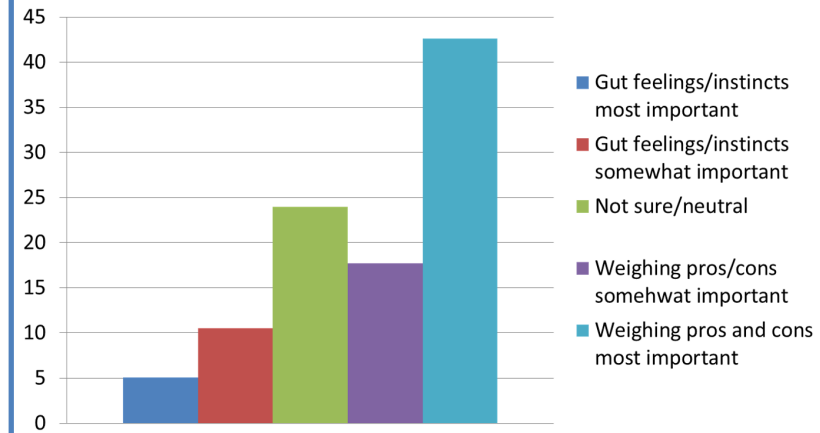
1 in 5 patients presenting to primary care had a shared decision to make for three cancer screening decisions

# Patient's Decision Journey

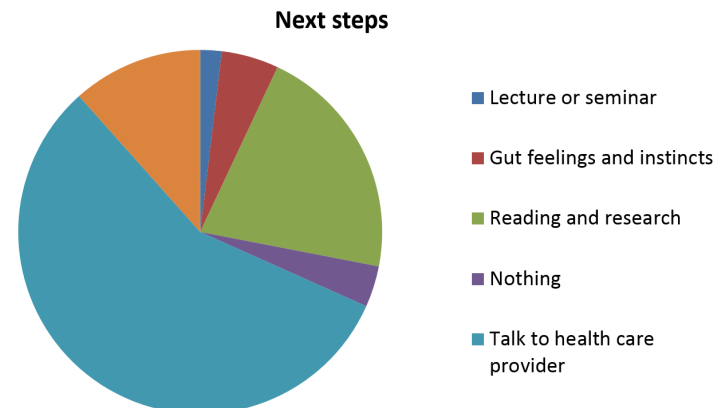
## How far along are you in the decision?



## Gut feelings vs cognitive weights

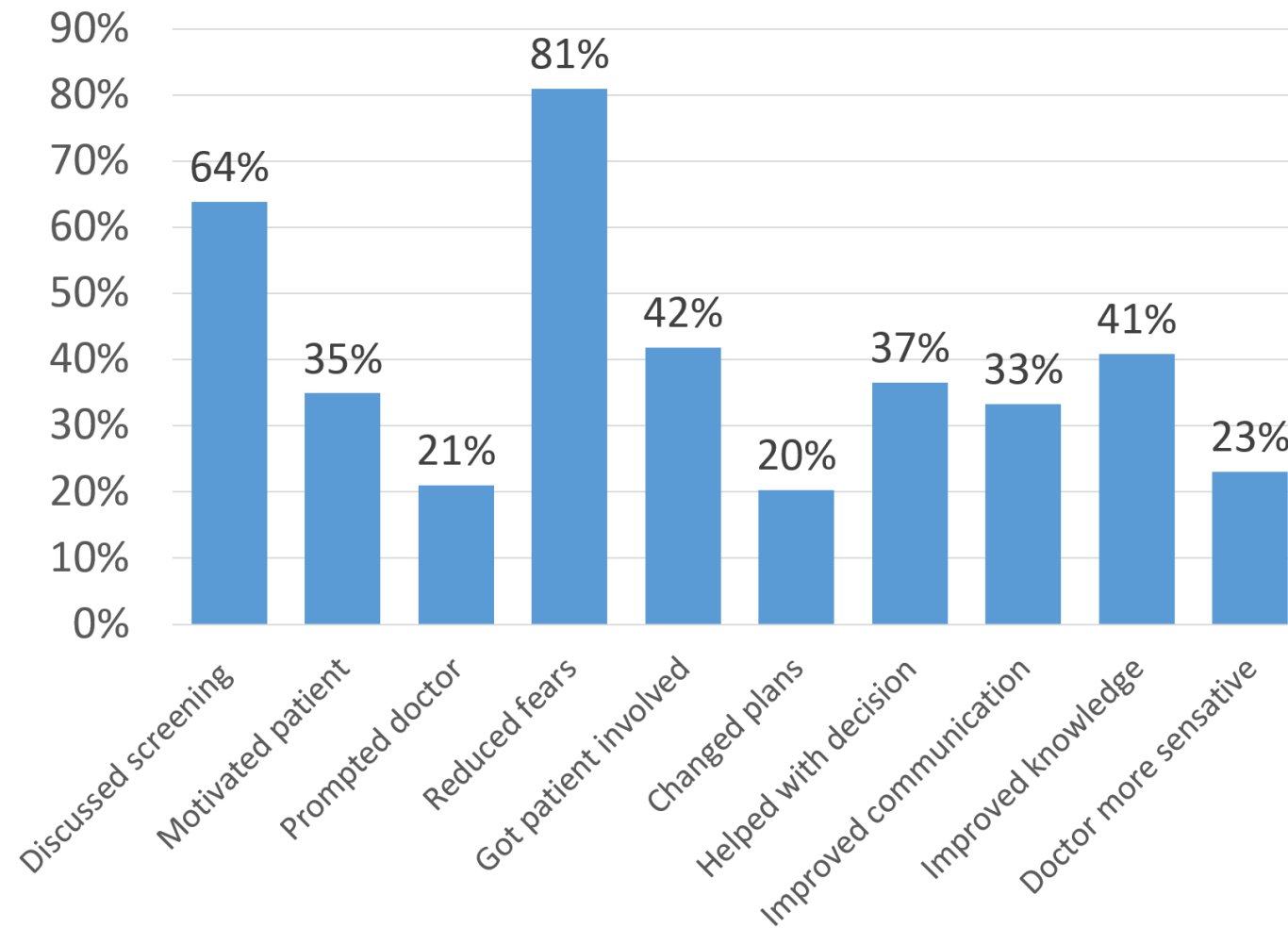


## What would you do next to decide?





# Impact of the Module on the Visit





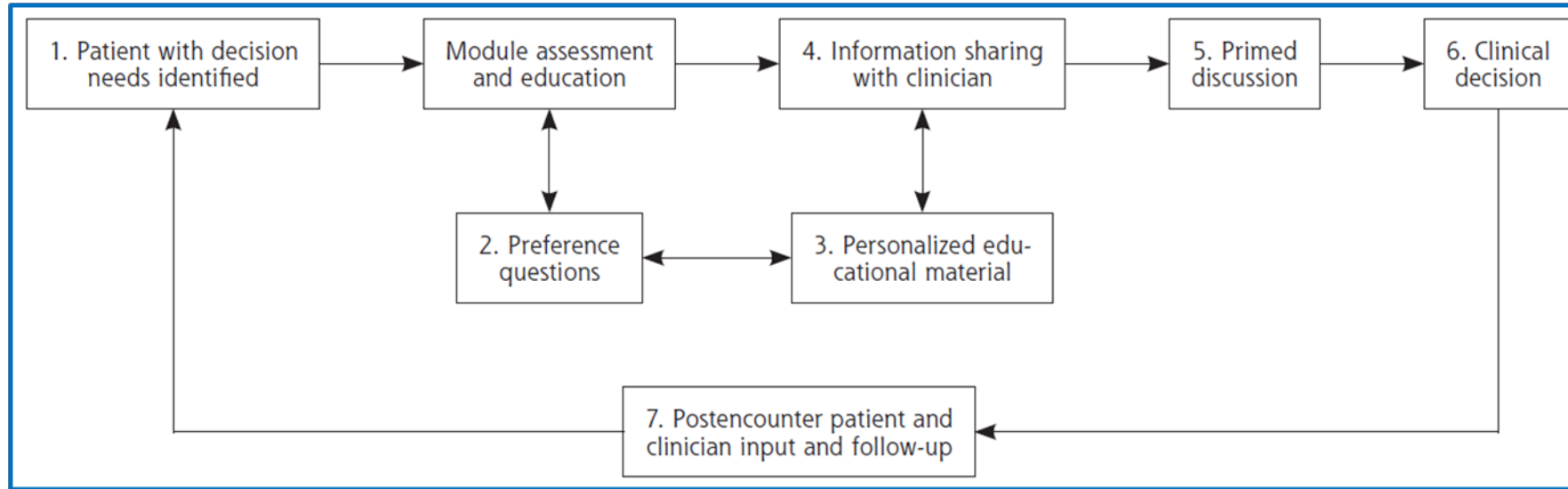
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## ***Current Work:***

**(1) Creating a disseminatable system (FHIR standards) and (2) Facilitating action (testing the *Better World*)**

# Model for Patient Care Planning



## Components

- Trigger – pending visit and a decision
- Educational content – from AHRQ and others
- Action step – inform clinician or order test

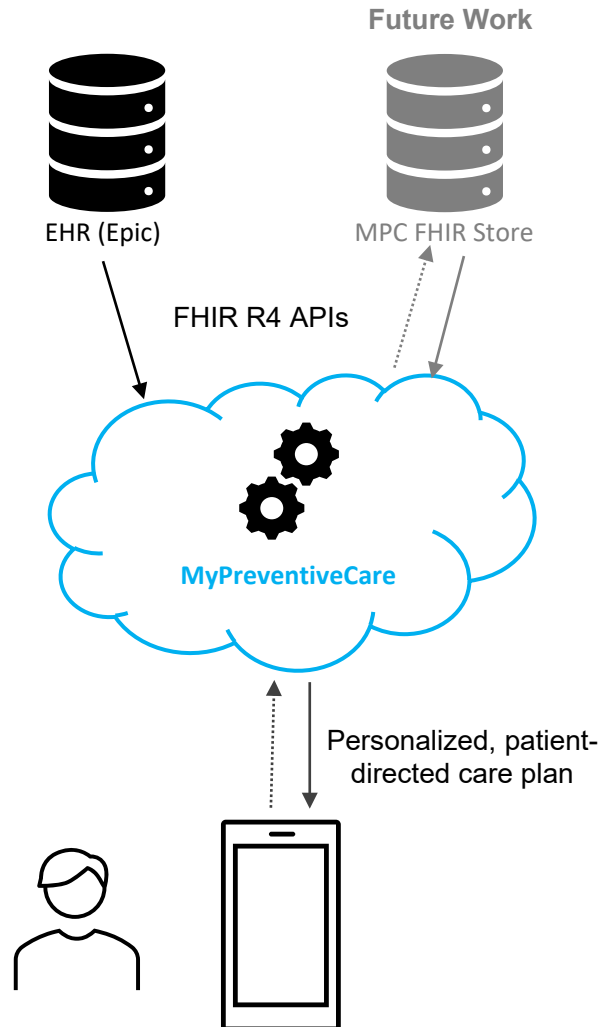
# Needs for Interoperable Standards-Based Formats

- Topic
- Evidence-based recommendations
- Translate recommendation into computable format
- EHR that can use standards-based format (e.g., FHIR and CQL)
- Evidence-based content for action

# Identified Prostate Cancer Screening as Target Decision

- Common decision
- Consistent guidelines with general agreement – USPSTF, AUA, ACS
- Easy trigger for decision – no PSA test in past 2 years for men age 55-69 years
- Patient material publicly available – USPSTF conversation aid and video

# Disseminatable Prototype



## Standards Used

- FHIR R4 – USCDI read-only resources from Epic
- FHIR Questionnaire
- Clinical Quality Language (CQL)
- SMART on FHIR app launch using Epic portal

- ❖ Patients use the MyPreventiveCare App to log into their Epic portal and authorize read-only access to their clinical records.
- ❖ App includes CQL logic to determine screening recommendations, present decision summary, and present FHIR questionnaire(s), if applicable.
- ❖ Work-in-progress to save questionnaire results into MPC FHIR data store for review with PHP at next visit.

# Cancer Screening Prototype

## Log in Through Patient Portal


### Allow Access to Your Account

MyPreventiveCare wants you to share your health data with them.

#### What you need to know about MyPreventiveCare

Before allowing MyPreventiveCare to access your account, please be aware of the following important details. This information is provided by the creators of MyPreventiveCare.


All mentions of the term "data" refer to the data from your electronic health record.



##### Who is offering the app?


This app is not provided by your healthcare provider. This app is provided by Clinical Cloud Solutions LLC, an individual or independent developer who is not a HIPAA-covered entity or business associate of your healthcare provider, for purposes of this feature.

Moving your data from your electronic health record to this app may move it out of a space protected by federal health privacy laws. The app will be able to use this data for any purposes permitted by your agreement with them. You should carefully review the app's privacy policy and statements for any privacy protections provided.




##### Who has access to your data when you provide it to this app?

Only people who have access to this device could access the data.




##### How does the app developer use your data?

The app developer does not use data about you beyond providing direct services. Clinical Cloud Solutions LLC's privacy policy and statements may have more details on how and when the app uses your data.




##### How long will the app have access to my information?

This app will have access to your information for 1 hour(s) and 0 minute(s), until Tuesday May 04, 2021, 7:25 PM



##### How is this app funded?

This app is funded by the business ventures of Clinical Cloud Solutions LLC.




##### Where does this app save your data?


This app does not save your data.


Want to dive deeper? Read more from the app developers of MyPreventiveCare.


### Allow or Deny Access


MyPreventiveCare wants your permission to access the following information:


Primary Care Provider

Demographics

Lab Results

Problems

Procedures

Vitals

Deny access

Allow access

## Decision Presented to Patient



### Decide If Prostate Cancer Screening Is Right for You

#### Your Information

Dan McDaniels (male) Age 68

Your PSA value was 4.7 on 2019-03-07

You said you are unsure if you have a family history of prostate cancer. If you do, this places you at higher risk for prostate cancer.

#### Your Clinical Data

- 0 Care Plan
- 6 Conditions
- 0 Goals
- 0 Medications (active)
- 0 Immunizations
- 1 Procedures
- 19 Lab Results


#### The Decision

Screening for prostate cancer has both potential benefits and harms. Whether you should be screened for prostate cancer is a personal decision. It depends on how worried you are about prostate cancer versus how worried you are about the harms of testing.




# Cancer Screening Prototype


## Can View USPSTF Video




My Preventive Care™  
Helping you take care of your health.



### Learn More



Watch a 3-minute video about the PSA testing. We'd like to suggest you watch the video to help you prepare for your upcoming visit. This video can help you prepare to ask questions that are important to you when you visit with your provider.



U Screening for Prostate Cancer Video: U... :  
**THE TASK FORCE RECOGNIZES**  
That the decision about prostate cancer screening is a complex and personal decision

Next

## ...or Read Information From CDC




My Preventive Care™  
Helping you take care of your health.



### Learn More



The website linked below provides some information from the U.S. Preventive Services Task Force (USPSTF) about the benefits and harms of prostate cancer screening. This information can help you prepare to ask questions that are important to you when you visit with your provider.



**Is prostate cancer screening right for you?**



Visit CDC Web Site

Next

# Cancer Screening Prototype

## FHIR Questionnaire



Next Steps

How do you feel about your decision?

I know the benefits of getting a PSA test.

Strongly disagree	Disagree	Neutral	Agree	Strongly agree
-------------------	----------	---------	-------	----------------

I know the risks of getting a PSA test.

Strongly disagree	Disagree	Neutral	Agree	Strongly agree
-------------------	----------	---------	-------	----------------

I am clear about which benefits and risks matter most to me.

Strongly disagree	Disagree	Neutral	Agree	Strongly agree
-------------------	----------	---------	-------	----------------

I have enough support and advice to make a decision about getting a PSA test.

Strongly disagree	Disagree	Neutral	Agree	Strongly agree
-------------------	----------	---------	-------	----------------


I feel sure about the best choice for me.

Strongly disagree	Disagree	Neutral	Agree	Strongly agree
-------------------	----------	---------	-------	----------------

Next

## Next Steps



Next Steps

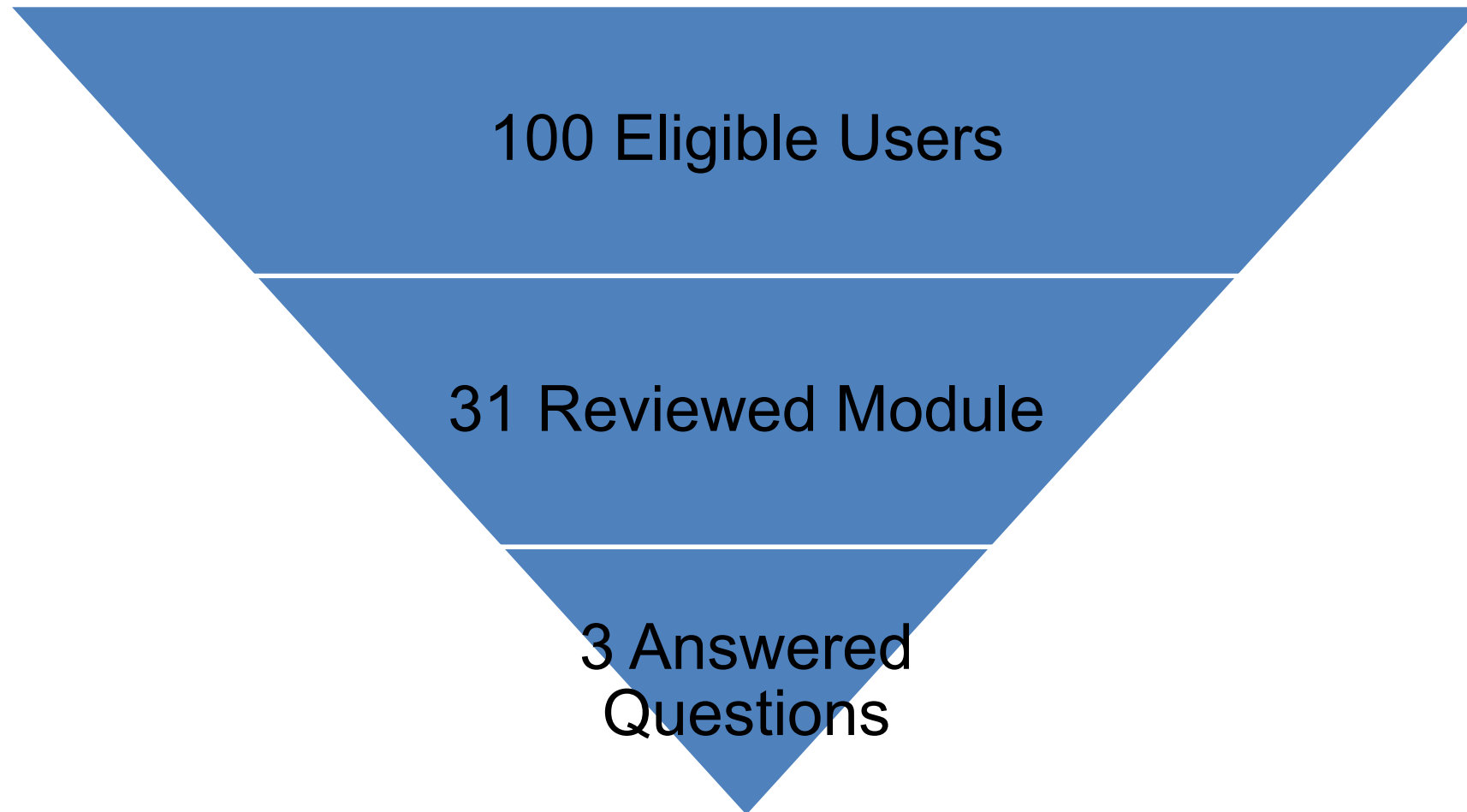
What do you want to do next?

What do you want to do next?

I want to give it more thought.	I think I want to get a PSA test.	I think I do not want to get a PSA test.
---------------------------------	-----------------------------------	--

Next

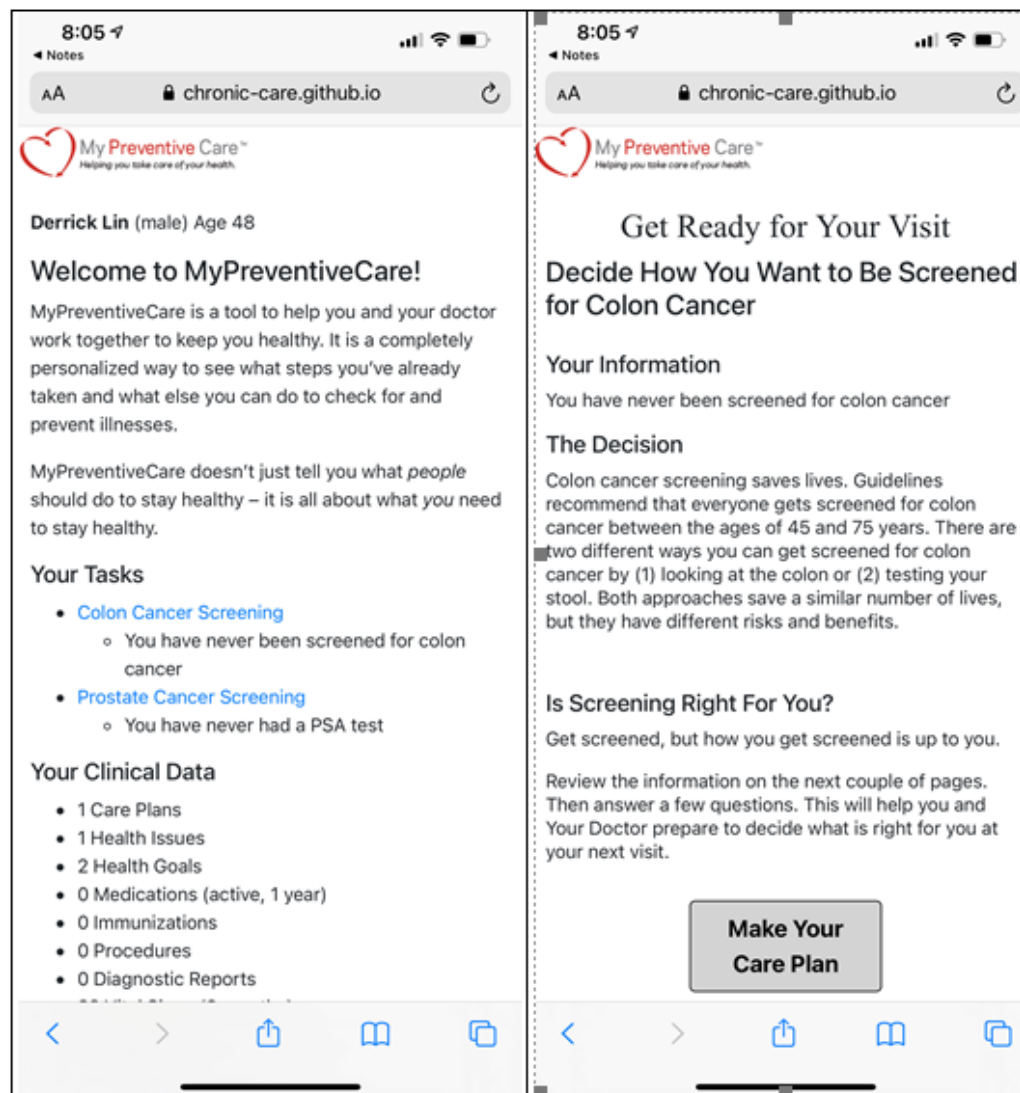
# Early Use – In MyPreventiveCare Framework



# Clinician Feedback

- Anticipating decisions and preparing patients highly valuable
- Prostate cancer screening important, but not most important topic
- More useful if add more decisions, maybe lung, colon, and breast cancer screening too
- When used made visits and decision easier
- Low use made it harder to integrate reviewing responses into usual workflow

# Next Iteration Cancer Screening: Multi-Decisions



# Early Lessons Learned

## Successes

- Technically feasible
- Able to anticipate decisions
- Material available to share with patients
- If integrated into care can improve efficiency of care

## Needs

- Cultural shift to prepare before visits
- More personal engagement approach
- Expand content to broader range of services

# National Needs

- Evidence-based material to share with patients for decision engagement
  - ▶ Updated over time
  - ▶ Easily identifiable
  - ▶ Dependable access
- Ability to automate reaching out to patients using defined logic
- Control to send locally defined patient reported information back into EMR



# Contact Information



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**[alexander.krist@vcuhealth.org](mailto:alexander.krist@vcuhealth.org)**



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# **Designing and Implementing a Digital Remote Asthma Symptom Monitoring Intervention During a Pandemic**

**Robert S. Rudin, PhD  
RAND Corporation**

# Relevant Disclosures



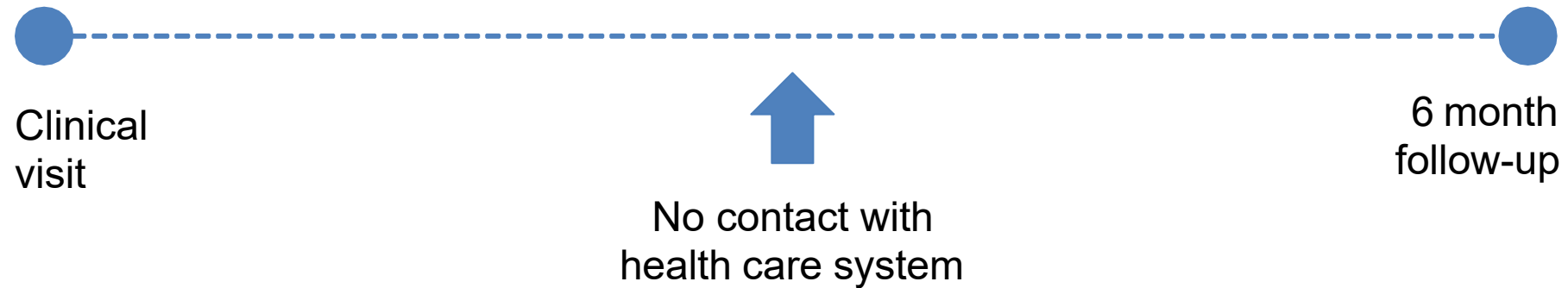
Funding from the Agency for Healthcare Research  
and Quality #1R18HS026432 and #1R21HS023960

# Presentation Goal

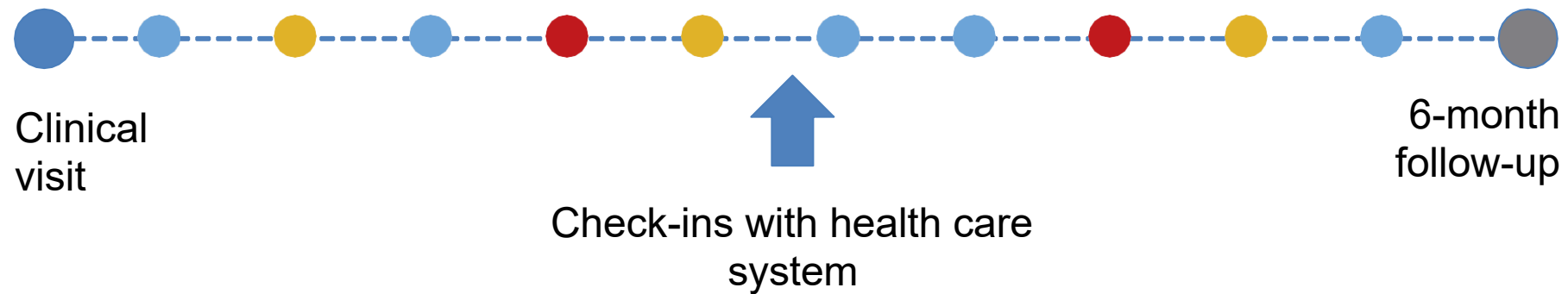
Describe how digital healthcare technologies that support gathering patient-reported outcomes can be used to improve patient empowerment and patient-driven care.

Describe how these technologies have been adapted to face the needs presented by the pandemic.

# Right Now, Patients Are on Their Own Between Visits



# What If Patients and Providers Had More Touch Points?



# We Began With Asthma

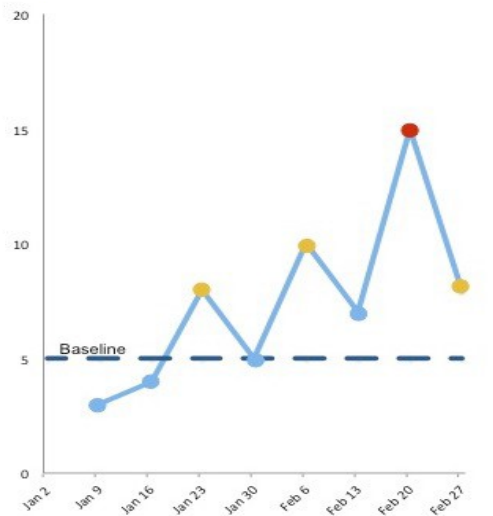
- 300 million people worldwide
- 1.75 million ED visits per year in U.S. (\$55 billion)
- Guidelines recommend symptom monitoring
- But timely help elusive for many patients
- So, we aimed to develop a scalable intervention for asthma symptom monitoring using patient reported outcomes (PROs)



# Feasibility Trial: Specialty Care



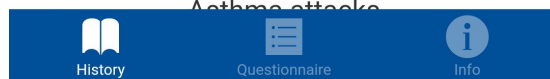
Asthma Questionnaire



6 Month

2 Month

Asthma attacks



BWHAdmin

PATIENTS

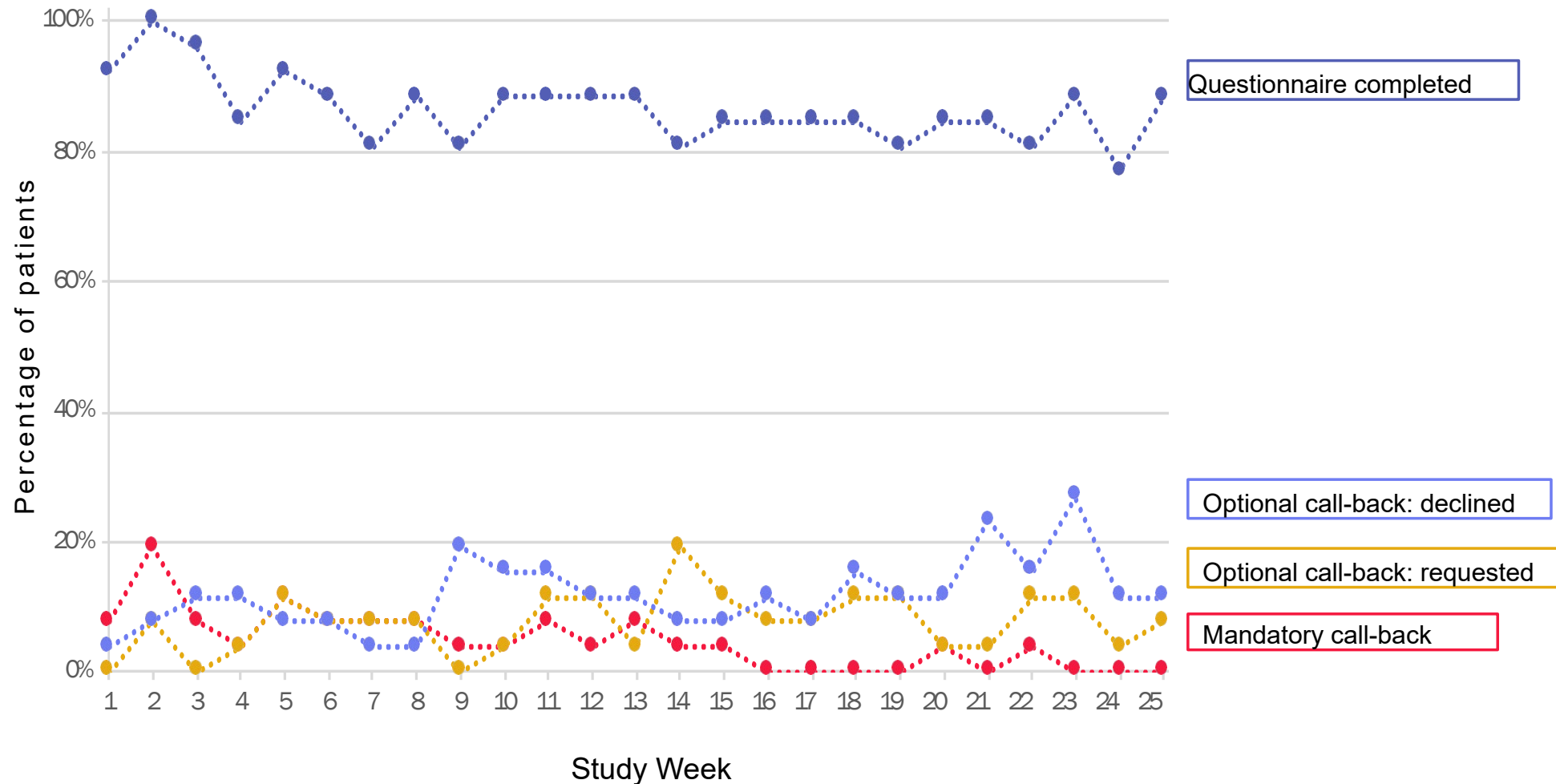
Rows on page: 10

Add Participant

#	First Name	Last Name	Username	Email	MRN	Status	Noti
	<input type="text" value="Search First Name"/>	<input type="text" value="Search Last Name"/>	<input type="text" value="Search Username"/>	<input type="text" value="Search Email"/>			
11	Laura	Shanahan	laurash	laurash@gmail.com	915781	active	
12	Paulo	Ramirez	pramirez	pauloramirez@harvard.edu	854197	active	
13	John	Doe	johndoe	johndoe@yahoo.com	5849732	active	
14	Kavita	Keren	kkeren	kavita@keren.com	4587921	active	
15	Molly	Mulcahy	mulchly	mollymulcahy@mass.gov	1584794123	active	
16	Vinnie	Dortenzio	vdortenzio	vdortenzio523@msn.com	49583346	active	
17	Bella	Olson	bolson	bella1938@aol.com	92543184	active	
18	Rachel	Christensen	rachelc	christensen@partners.org	6852541	active	
19	Theodore	Blakeley	tblakeley	ted@tedblakely.com	29761853	active	
20	Scott	Wiesnewski	scottski	scottski@turnbullprice.com	736951	active	

1 2 3 4

# Adherence Was 84% Among 26 Patients



# Qualitative Findings

## **Patients:**

- Were more aware of their asthma
- Felt more connected to provider
- Believed app was simple

## **Clinicians:**

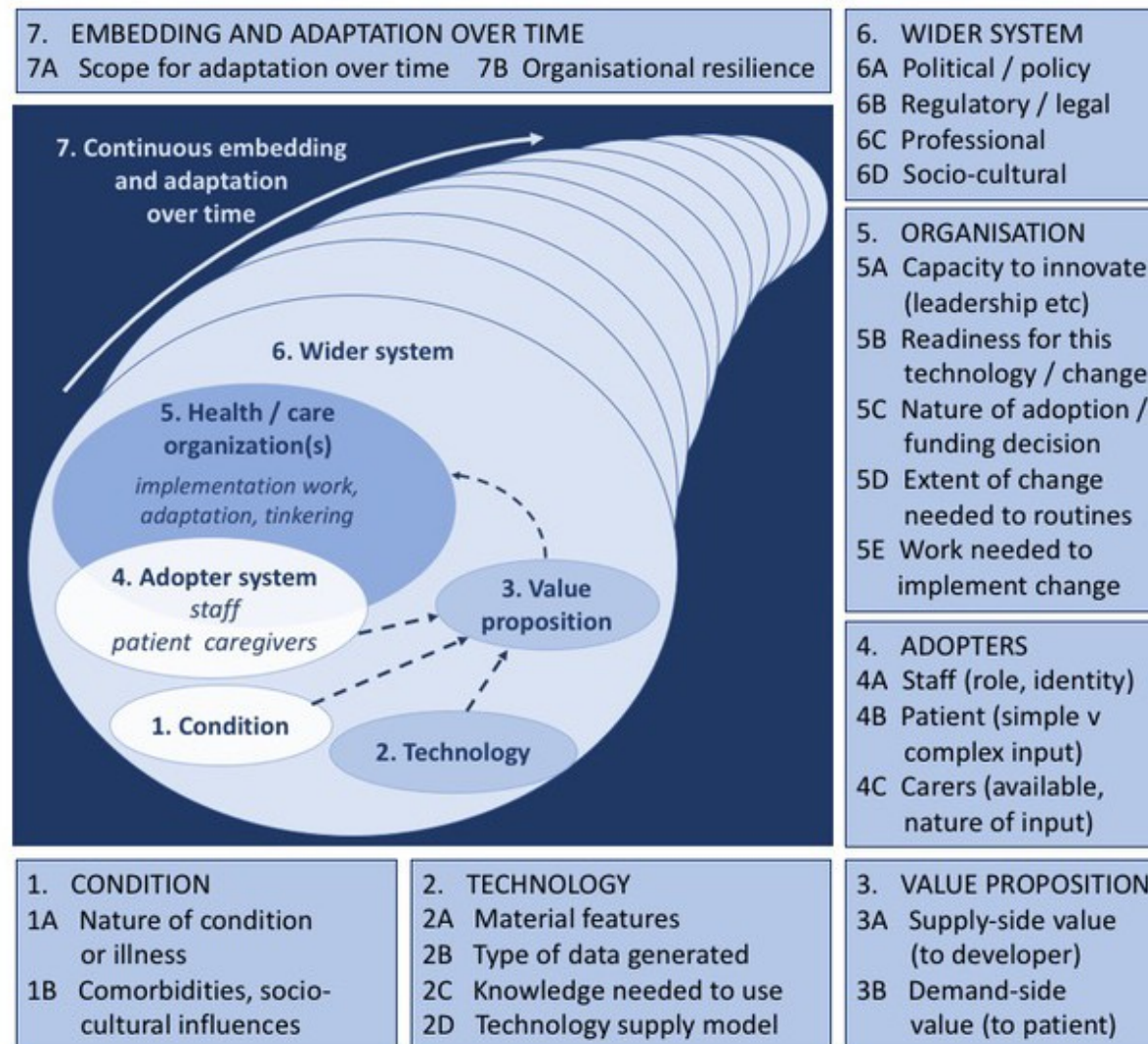
- Found minimal additional work was required
- Believed it facilitated triage
- Believed it informed conversations during visits

## **Needed Enhancements:**

- Ability to enter peak flow
- Ability to enter notes/triggers
- Less work when asthma is stable
- Integrated into EHR

# Scale and Spread: Primary Care

## Non-adoption Abandonment Scale-up Spread Sustainability Framework



# Scale and Spread: Primary Care

1:35

< Back

In the past week, did you have any of the following?

Asthma attacks

Awakened at night

Asthma interfered with normal activities

Used your rescue inhaler

Shortness of breath

YES

I had one or more of these

NO

I didn't have any of these

08:15

< Back Weekly Asthma Questionnaire

2 out of 6

In the past week, how often did you have an asthma attack?

Not at all

Once or twice

3 to 6 times

Once a day

More than once a day

Next

16:33

Questionnaire Results

Your asthma symptoms are:  
**Severe**

Details

Would you like to request a call from a nurse to discuss your asthma?

Call me

No, thanks

10:48

My Upcoming Items

Mar 2 Questionnaire

My Previous Questionnaires

Feb 24

Feb 16

\* For week ending Feb 16

25

0 100

Asthma control

Compared to baseline

Very severe symptoms

→ Partly Controlled

→ Same

→ None

Feb 9 Missed

Feb 3

Questionnaire

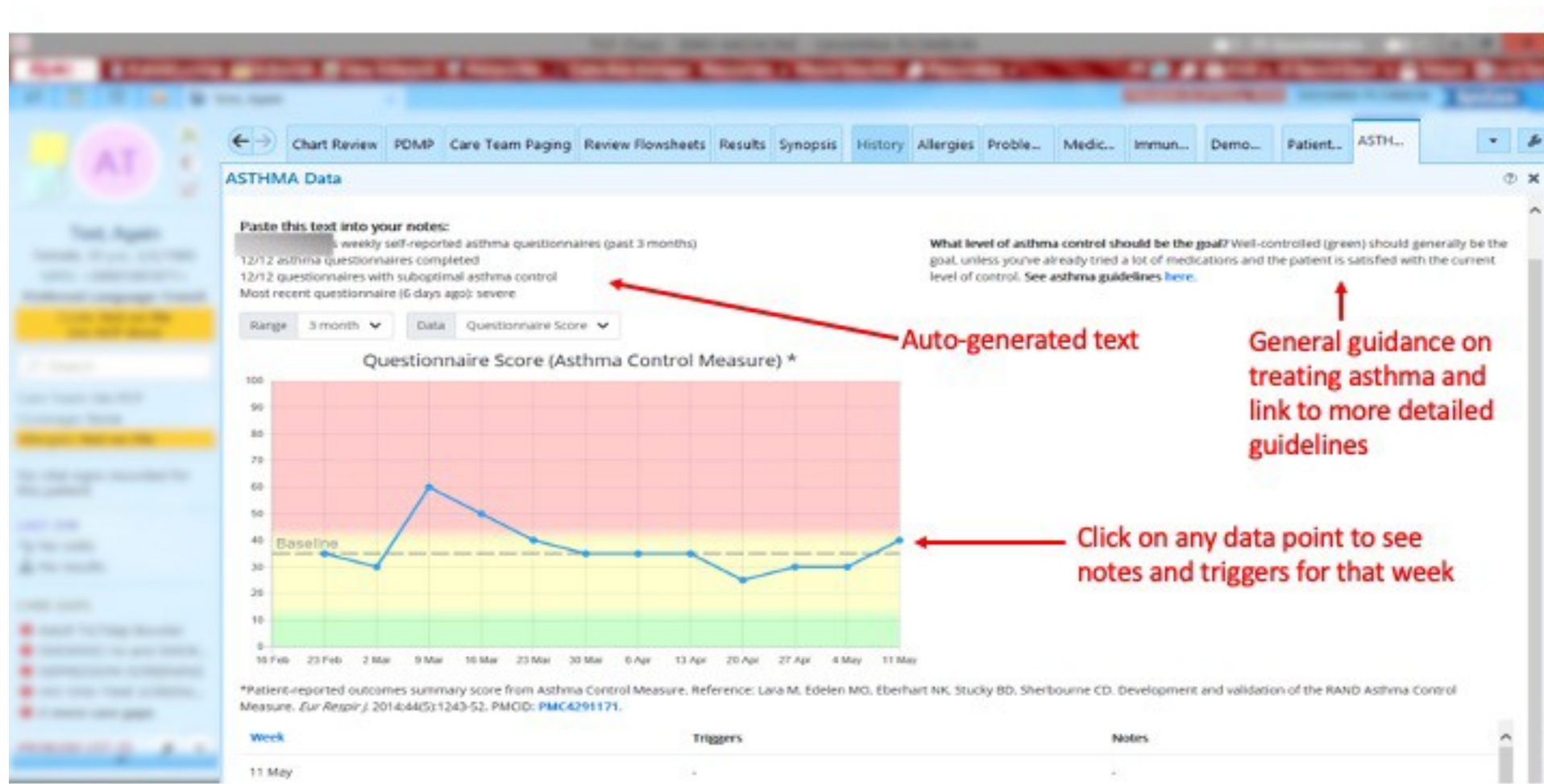
History

Add Data

Learn

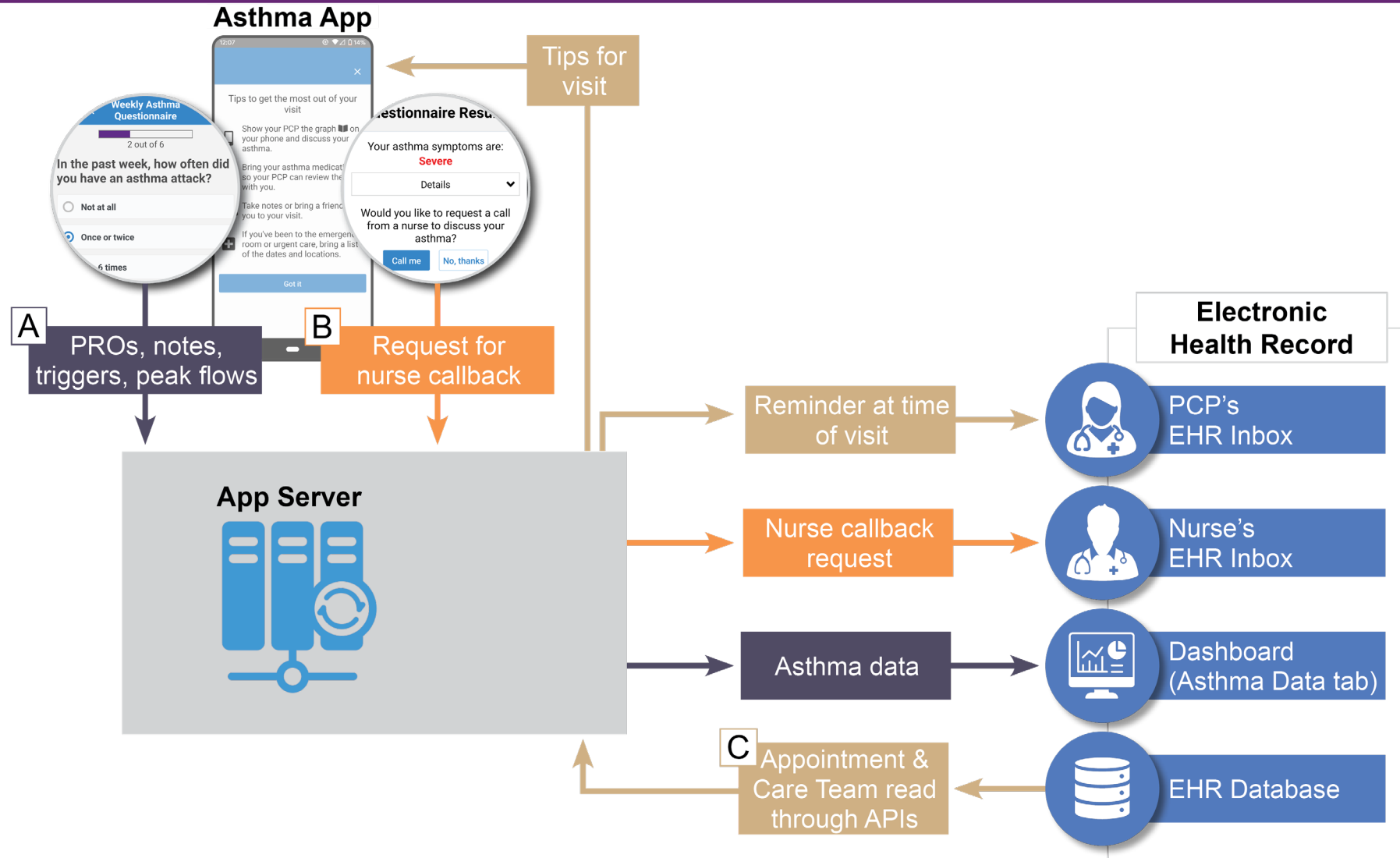
Settings

# Scale and Spread: Primary Care





# Under the Hood



# In The COVID-19 Era, And Beyond, Symptom Monitoring Should Be A Universal Health Care Function

[Robert S. Rudin](#), [Mark W. Friedberg](#), [Daniel H. Solomon](#)

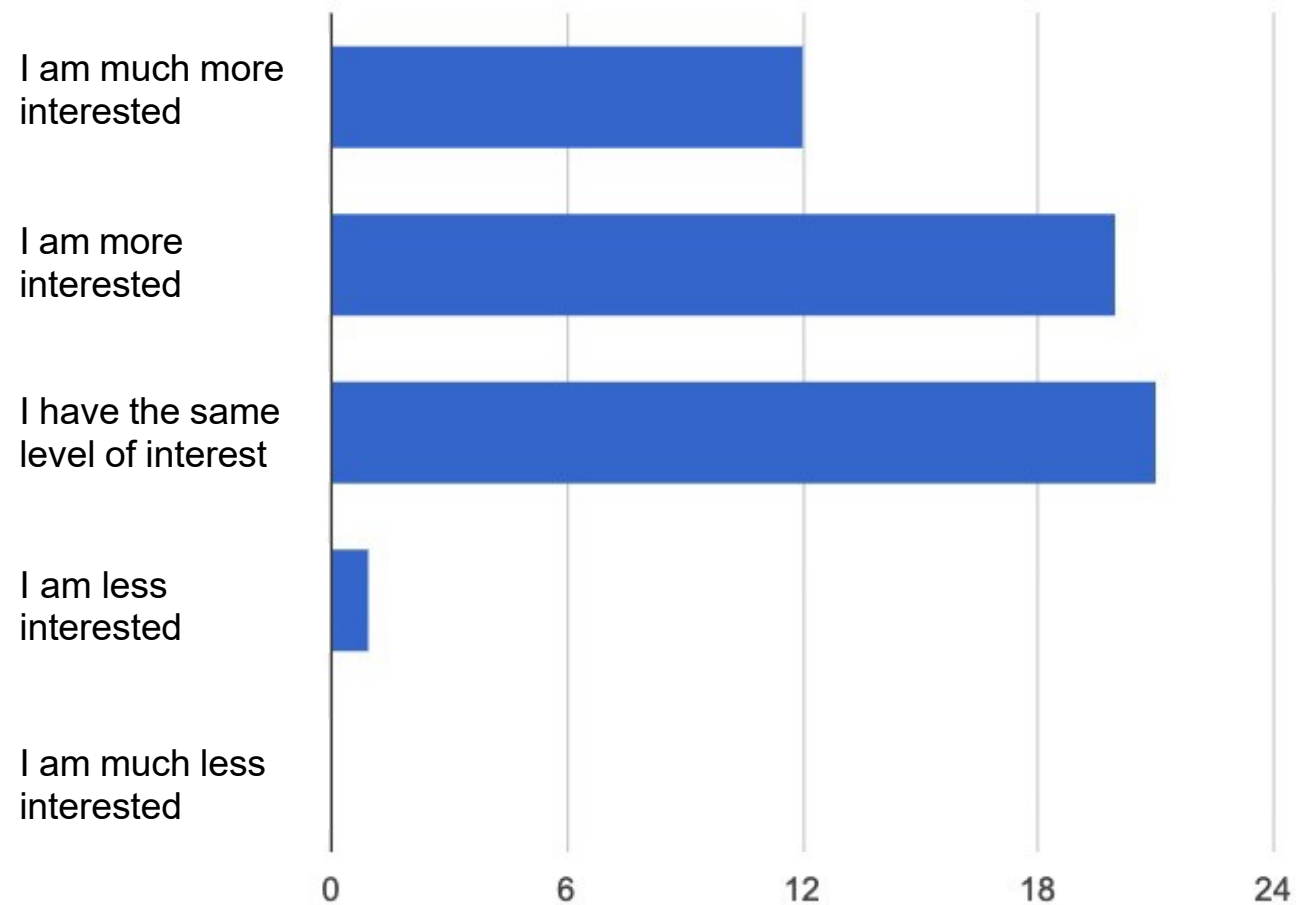
JUNE 18, 2020

10.1377/hblog20200616.846648





# Greater Interest Among PCPs in Digital Remote Monitoring Interventions in the Era of COVID-19



# Integrated COVID-19 Screener and Educational Materials

14:45 77%

## My Upcoming Items

Questionnaire  
(expires in 33 hours) [BEGIN](#)

## My Previous Questionnaires

Apr 27	Missed
Apr 20	Missed
Apr 13	Missed
Apr 6	Missed
<a href="#">Show more</a>	

## COVID-19 Screener

See if you should be evaluated

[Questionnaire](#) [History](#) [Add Data](#) [Learn](#) [Settings](#)

14:53 76%

## Expect a call within 24 hours.

*If you need help sooner, contact your healthcare provider directly, call 911, or visit your local emergency room.*

## One more thing

*Please answer these questions to see if you should be evaluated for COVID-19*

[Next](#)

15:29 75%

## Learn about your asthma

### Recommended for this week

- How to use my asthma puffer inhaler with and without a spacer [▶](#)
- What is the difference between my rescue and controller inhalers? [▶](#)
- Tips to remember my asthma medication [▶](#)

### Other videos and information

- COVID-19 and Asthma [▶](#)
- When should I use my rescue inhaler? [▶](#)
- How to use my powder inhaler [▶](#)

[Questionnaire](#) [History](#) [Add Data](#) [Learn](#) [Settings](#)

# Recruitment Results to Date

Recruitment Strategies	Patients Approached (N)	Patients Consented (N)	Success Rate (%)
Letter	311	3	1.0%
Patient Portal	123	17	13.8%
Letter + Patient Portal	640	59	9.2%
Letter + Phone Call	696	23	3.3%
Letter + Patient Portal + Phone Call	979	101	10.3%
Provider 1-click referral*	51	2	3.9%
In-person	9	0	--

Success rate: consented/approached

\*51 provider 1-click referrals received – 31 received letters, 16 received patient portal messages, 28 received phone calls

# Tips for Doing Clinically Integrated Digital Remote Monitoring

- Use NASSS framework to design the intervention – keep it simple, scalable
- Get strong support from clinic leadership
- Engage as many frontline clinicians as possible in design and planning – make it high value, low burden
- Recruit through as many methods as possible
- Stay flexible as practice habits adjust to the evolving pandemic response

# Team

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HEALTH



BRIGHAM AND  
WOMEN'S HOSPITAL

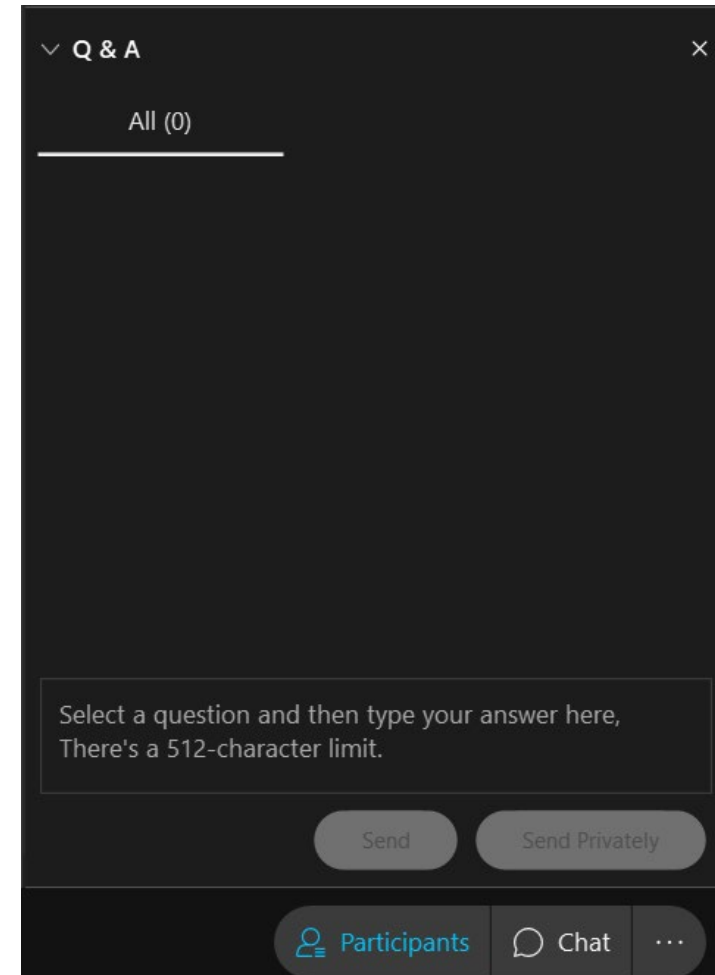
# Contact Information



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# How to Submit a Question

- At any time during the presentation, type your question into the “Q&A” section of your WebEx Q&A panel
- Please address your questions to “All Panelists” in the drop-down menu
- Please include the presenter’s name or their presentation order number (first, second, or third) with your question.
- Select “Send” to submit your question to the moderator
- Questions will be read aloud by the moderator

A screenshot of the WebEx Q&A panel. At the top, it says "Q & A" with a dropdown arrow and a close button. Below that, it says "All (0)". The main area is a large text input field with a placeholder that says "Select a question and then type your answer here, There's a 512-character limit." At the bottom of the input field are two buttons: "Send" and "Send Privately". At the very bottom of the panel are three tabs: "Participants" (with a person icon), "Chat" (with a speech bubble icon), and a menu icon (three dots).

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The website will be open for completing your evaluation for 14 days; after the website has closed, you will not be able to register your attendance and claim CE credit.